

17th Annual TERRA Conference

A Green Path to a Black Hard Road



Lincoln Highway between Ames and Nevada, 1918.
(Courtesy: Iowa State Highway Commission)

By Alan Forsberg

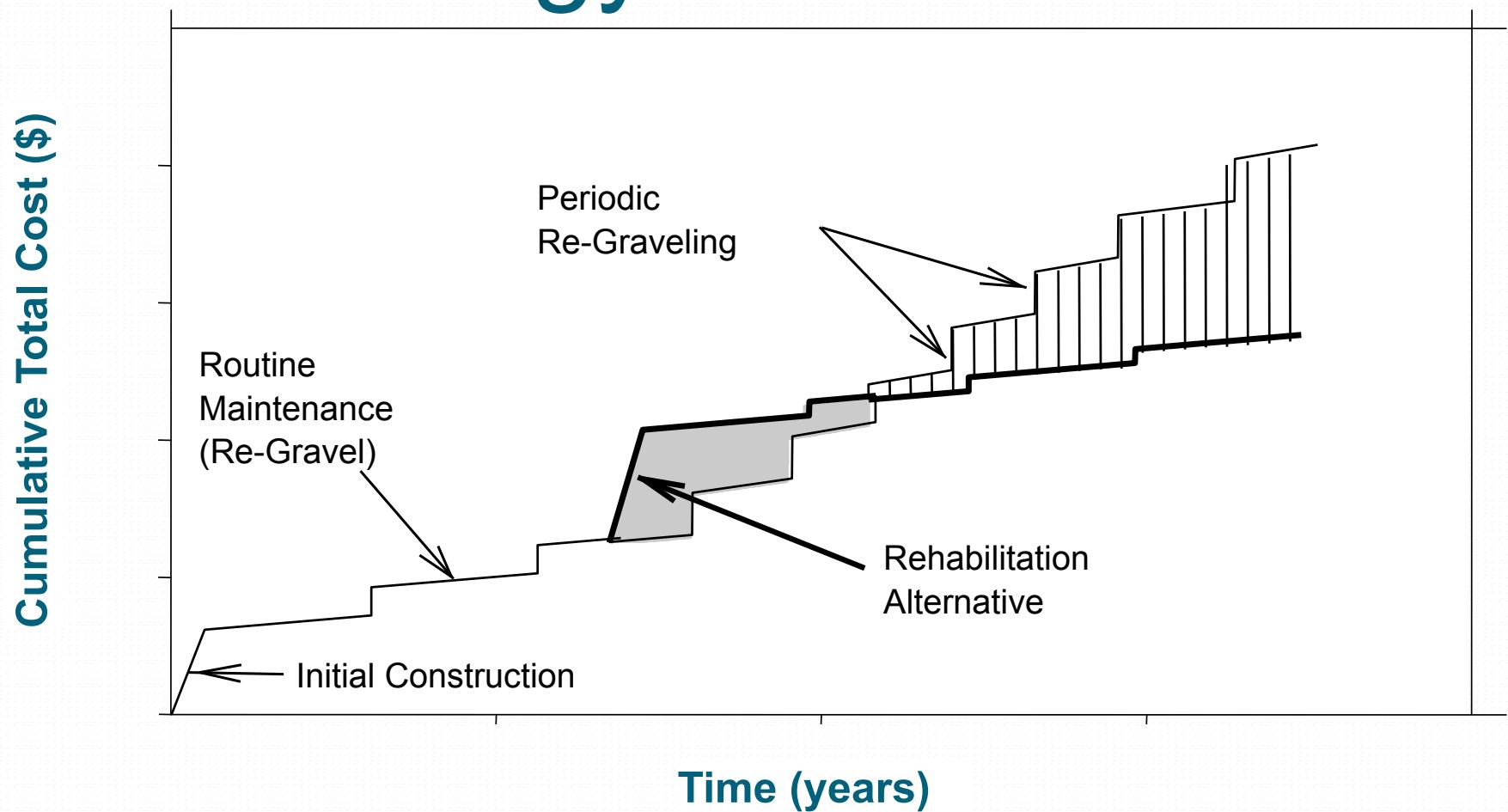
Problems Still Exist in 2013



The Problem

-  Gravel Roads lose about 1" of Agg/yr/100 ADT
-  It costs > \$5,000 to add 1" of gravel/mile
-  Maintenance costs depend on blade cycle, gravel costs
-  Dust, bumps, frost boils
-  Road network too large to sustain
-  Innovation needs to address problems/cost

The Strategy – Lower LCC



Key Considerations

-  What are short and long term plans for road?
-  Do I know the root cause of pavement issues?
-  What options fit my desired result?
-  What additional information do I need to evaluate my options?
-  Where can I go for help?

CSAH 48 – Upgrading a Gravel Road



Steps in the Process – the Four P's

Planning

Assessment

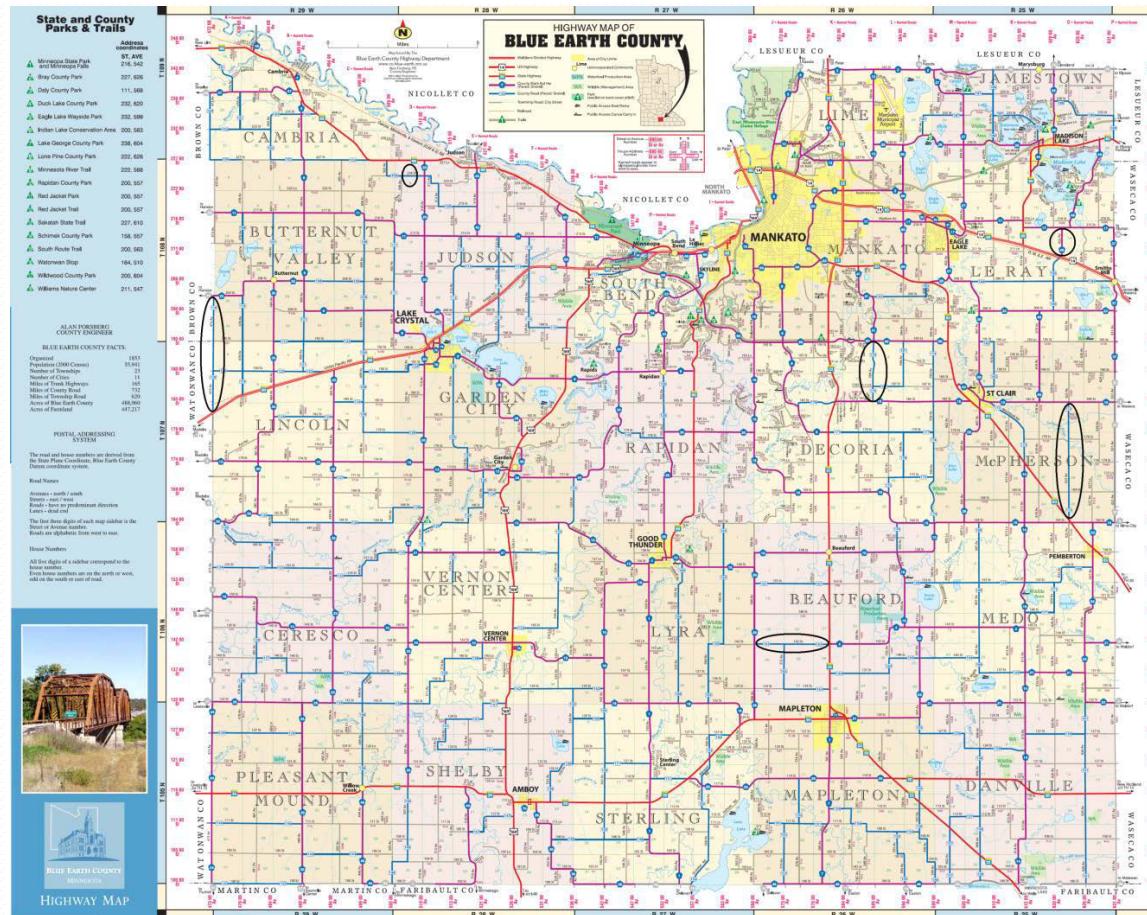
Design

Production

Placement

Performance

Planning



Planning

- ☒ Past practices of stabilizing gravel roads had become cost prohibitive.
- ☒ A collaborative team of partners worked together to address the issue
- ☒ Recycled Materials were used to offset most (up to 80%) of the stabilizing binder that was used in the past
 - ☒ RAP (Recycled Asphalt Pavement)
 - ☒ RAS (Recycled Asphalt Shingles)
- ☒ An Assessment of the Road preceded the design of the project

Planning

-  Design work was provided by Waste Mgt. :
-  65% RAP / 15% RAS / 18% Gravel / 2% Emulsion
-  $3.3" / 1.8" / 0.9" = 6"$ total thickness
-  Unconfined compressive strength -125 psi
-  Soaked compressive strength- 98 psi
-  Placement began on 9/13

Production - RAS



Placement of RAP/RAS



Placement - Stabilization



Placement - Compaction



Placement – Finished Surface



Performance – Surface prior to chip seal



Performance - Surface after Chipping



Performance – Road after 1st winter



Performance – Road after 1st winter



3 C's to evaluate new technology in rehab applications



Constructability



Cost



Credibility

Constructability

 The process was tweaked for success:

 Haul RAP / RAS

 Inject Emulsion

 Initial Compaction

 Grade to proper cross section

 Final Compaction

 Heat Surface to Prepare for Chip Seal

 Chip Seal Surface after Cure

 1 Fall 2010

 2 Spring 2011

Cost



Project cost was \$119,000 per mile

Expect project cost around \$100,000 per mile when implemented

Implementation will be based on Performance

Performance will be monitored going forward

Credibility

 Several Partners Involved in Project:

 Waste Management

 Midstate Reclamation

 Road Science

 Dustrol

 County Maintenance Forces

 Credibility comes with Success and Continued Improvements through Partnerships

Questions



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